

Positive Results from State-of-the-Art Reactor

Three successful runs of the bath pilot batch reactor conducted under standard process conditions

Most recent run produced several kilograms of solid powder product that appears to have had more than 90% of the fluorine removed, as targeted

Assay results from external laboratory anticipated in January 2024, with further reactor tests planned



Figure 1: Third run of bath pilot batch reactor under standard process conditions.

ABx Group (ASX: ABX) ("ABx" or "the Company") is pleased to announce that its 83%-owned subsidiary, ALCORE, has completed three test runs under standard process conditions since commissioning the state-of-the-art bath pilot batch reactor¹.

The reactor is operating at the ALCORE Technology Centre on the NSW Central Coast and has been designed for the recovery of fluorine from 'excess bath' (an aluminium smelter waste) to produce hydrogen fluoride. At commercial scale, a proportion of the hydrogen fluoride will be further processed via an existing commercial process to aluminium fluoride – a high-value chemical essential for aluminium smelting that is currently fully imported.

The new reactor is approximately ten times larger than the Company's previous laboratory-scale reactor. Each run has involved approximately 10 kg total of bath and sulfuric acid.

¹ See ASX Announcements dated 13 September & 8 November 2023

Following two runs and minor equipment modifications, the reactor is now performing as designed. In particular, the reactor is achieving enhanced process mixing.

Hydrogen fluoride gas has successfully been produced throughout each of the test runs. In the most recent run, several kilograms of metal sulfate powder were produced (Figure 2) that appeared similar to the powder previously produced by more manual methods using smaller reactors, where more than 90% of the fluorine was extracted.

This gives confidence that the enhanced process mixing is delivering higher fluorine yield in a single pass, which is a highly significant milestone for the ongoing scale-up of the ALCORE process.

Several powder samples from the runs have been sent to an external laboratory to measure the fluorine content and confirm the fluorine yield. Results from these independent assessments are anticipated in January 2024.



Figure 2: Sample of metal sulfate powder produced from bath pilot batch reactor.

Commenting on the reactor performance, ABx Group Managing Director and CEO Dr Mark Cooksey said:

"The scale-up of this technology is all about process and equipment validation at increasing scales of operation, increasingly providing us with certainty that our world-first process can be efficiently and effectively scaled up to commercial operation."

"Since conducting our first runs with this significantly larger batch reactor in November, we have demonstrated that we can run the reactor safely under standard process conditions and can produce hydrogen fluoride. Now we are seeing evidence that it is capable of producing the all-important higher fluorine yield that underpins commercial production."

"Greater certainty of our progress will be provided in January with the receipt of assay results.

"I am exceptionally pleased with the acceleration of ALCORE's activities and look forward to further runs of the batch reactor, as every run offers further insights into the design for the next critical stage of development – the continuous pilot plant."

This announcement is approved for release by the board of directors.

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About ABx Group Limited

ABx Group (ABX) is a uniquely positioned, high-tech Australian company delivering materials for a cleaner future.

The two current areas of focus are:

- Creation of an ionic adsorption clay rare earth project in northern Tasmania
- Establishment of a plant to produce hydrogen fluoride and aluminium fluoride from recycled industrial waste, via its 83%-owned subsidiary, Alcore

There is also a legacy business:

- Mining and enhancing the value of bauxite resources for cement, aluminium and fertilisers.

We only operate where welcomed and we apply best practices to restore any disturbed land to a better condition than we found it.

Disclaimer Regarding Forward Looking Statements

This ASX announcement (Announcement) contains various forward-looking statements. All statements other than statements of historical fact are forward-looking statements. Forward-looking statements are inherently subject to uncertainties in that they may be affected by a variety of known and unknown risks, variables and factors which could cause actual values or results, performance, or achievements to differ materially from the expectations described in such forward-looking statements.

ABx does not give any assurance that the anticipated results, performance, or achievements expressed or implied in those forward-looking statements will be achieved.